

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in this application.

Listing of Claims:

1. (Previously presented) A static mixer comprising:
a first grid comprising one or more crossing elements and one or more slots adjacent to each crossing element and a second grid comprising one or more crossing elements and one or more slots adjacent to each crossing element,
wherein said crossing elements of said first grid are arranged at intersecting angles to said crossing elements of said second grid; and
at least one elongated connector positioned between and secured to said crossing elements of said first grid and said crossing elements of said second grid,
wherein said connector has crossing grooves positioned along the lines of contact of said crossing elements with said connector, wherein said grooves provide a larger bonding surface and mechanical fitting for holding said crossing elements together.
2. (Original) The static mixer of claim 1, wherein said grids are arranged such that each crossing element of one grid intersects a slot in the other grid.
3. (Original) The static mixer of claim 2, wherein said crossing elements of said first grid are in a generally parallel relationship relative to one another.

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

4. (Original) The static mixer of claim 3, wherein said crossing elements of said first grid lie within a common plane.

5. (Original) The static mixer of claim 4, wherein said crossing elements of said second grid are in generally parallel relationship relative to one another.

6. (Original) The static mixer of claim 5, wherein said crossing elements of said second grid lie within a common plane.

7. (Original) The static mixer of claim 1, wherein said crossing elements are one of corrugated plates and tubes.

8. (Original) The static mixer of claim 1, wherein the static mixer comprises more than two grids.

9. (Original) The static mixer of claim 8, wherein each grid comprises crossing elements.

10. (Original) The static mixer of claim 9, wherein said crossing elements of each grid are arranged at intersecting angles to one another.

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

11. (Original) The static mixer of claim 10, wherein said connector is positioned between said crossing elements of each grid.

12. (Original) The static mixer of claim 1, wherein said crossing elements are one of metal, polymeric, ceramic construction or combinations thereof.

13. (Original) The static mixer of claim 1, wherein said connector extends continuously along the entire cross-sectional length of said static mixer.

14. (Original) The static mixer of claim 1, wherein said elongated connector is positioned so that it intersects with said crossing elements along at least some of their points of intersection.

15. (Canceled).

16. (Previously presented) The static mixer of claim 1, wherein said grooves are located in a first face of said connector and extend in relationship to said crossing elements of said first grid and wherein said grooves are located in a second face of said connector and extend in relationship to said crossing elements of said second grid.

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

17. (Original) The static mixer of claim 1, wherein said crossing elements are secured to said connector by one of welding, brazing, gluing and combinations thereof.

18. (Previously presented) A method of constructing a static mixer, said method comprising:

- (a) providing at least two grids;
- (b) positioning one or more crossing elements and one or more slots adjacent to each crossing element in a first grid;
- (c) positioning one or more crossing elements and one or more slots adjacent to each crossing element in a second grid;
- (d) arranging said crossing elements of said first grid at intersecting angles to said crossing elements of said second grid;
- (e) positioning at least one connector between said crossing elements of said first grid and said crossing elements of said second grid, wherein said connector has crossing grooves positioned along the lines of contact of said crossing elements with said connector, wherein said grooves provide a larger bonding surface and mechanical fitting for holding said crossing elements together; and
- (f) securing said connector to said crossing elements.

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

19. (Original) The method of claim 18, further comprising:
arranging said grids such that each crossing element of one grid intersects a slot in
the other grid.
20. (Original) The method of claim 19, further comprising:
providing more than two grids.
21. (Original) The method of claim 20, further comprising:
positioning one or more crossing elements in each grid.
22. (Original) The method of claim 21, further comprising:
arranging said crossing elements of each grid at intersecting angles to one
another.
23. (Original) The method of claim 22, further comprising:
positioning said connector between said crossing elements of each grid.
24. (Previously presented) A static mixer assembly comprising:
a generally ring-shaped fluid flow conduit having a central axis, concentric inner
and outer, radially spaced, circumferentially extending surfaces, said inner surface
defining a fluid flow path which extends along said axis;

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

one or more static mixers located in said flow path, each static mixer having a first grid comprising one or more crossing elements and one or more slots adjacent to each crossing element and a second grid comprising one or more crossing elements and one or more slots adjacent to each crossing element,

wherein said crossing elements of said first grid are arranged at intersecting angles to said crossing elements of said second grid; and

at least one elongated connector positioned between and secured to said crossing elements of said first grid and said crossing elements of said second grid,

wherein said connector has crossing grooves positioned along the lines of contact of said crossing elements with said connector, wherein said grooves provide a larger bonding surface and mechanical fitting for holding said crossing elements together.

25. (Original) The static mixer assembly of claim 24, wherein said grids are arranged such that each crossing element of one grid intersects a slot of the other grid.

26. (Currently amended) A static mixer comprising:
a first grid comprising at least two spaced crossing elements and one or more slots positioned between and adjacent to said ~~each~~ crossing elements and a second grid comprising at least two spaced crossing elements and one or more slots positioned between and adjacent to said ~~each~~ crossing elements,

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

wherein said crossing elements of said first grid are arranged at intersecting angles to said crossing elements of said second grid, and wherein said grids are arranged such that each crossing element of one grid intersects ~~and extends at least partially through~~ a slot in the other grid; and

~~at least one~~ multiple elongated connectors positioned between and secured to said crossing elements of said first grid and said crossing elements of said second grid.

27. (Previously presented) The static mixer of claim 26, wherein said crossing elements of said first grid are in a generally parallel relationship relative to one another.

28. (Previously presented) The static mixer of claim 27, wherein said crossing elements of said first grid lie within a common plane.

29. (Previously presented) The static mixer of claim 28, wherein said crossing elements of said second grid are in generally parallel relationship relative to one another.

30. (Previously presented) The static mixer of claim 29, wherein said crossing elements of said second grid lie within a common plane.

31. (Previously presented) The static mixer of claim 26, wherein said crossing elements are one of corrugated plates and tubes.

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

32. (Previously presented) The static mixer of claim 26, wherein the static mixer comprises more than two grids.

33. (Previously presented) The static mixer of claim 32, wherein each grid comprises crossing elements.

34. (Previously presented) The static mixer of claim 33, wherein said crossing elements of each grid are arranged at intersecting angles to one another.

35. (Currently amended) The static mixer of claim 34, wherein said connectors extend in parallel and spaced apart relationship to each other and are positioned between said crossing elements of each grid.

36. (Previously presented) The static mixer of claim 26, wherein said crossing elements are one of metal, polymeric, ceramic construction or combinations thereof.

37. (Currently amended) The static mixer of claim 26, wherein said connectors extends continuously along the entire cross-sectional length of said static mixer.

Serial No. 10/619.688

Reply to Office Action dated December 29, 2005

38. (Currently amended) The static mixer of claim 26, wherein said elongated connectors are is positioned so that they it intersects with said crossing elements along at least some of their points of intersection.

39. (Currently amended) The static mixer of claim 26, wherein each of said connectors has crossing grooves positioned along the lines of contact of said crossing elements with said connector, wherein said grooves provide a larger bonding surface and mechanical fitting for holding said crossing elements together.

40. (Currently amended) The static mixer of claim 39, wherein said grooves are located in a first face of each of said connectors and extend in relationship to said crossing elements of said first grid and wherein said grooves are located in a second face of each of said connectors and extend in relationship to said crossing elements of said second grid.

41. (Currently amended) The static mixer of claim 26, wherein said crossing elements are secured to said connectors by one of welding, brazing, gluing and combinations thereof.

42. (Currently amended) A method of constructing a static mixer, said method comprising:

- (a) providing at least two grids;

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

- (b) positioning at least two spaced crossing elements and one or more slots between and adjacent to each crossing element in a first grid;
- (c) positioning at least two spaced crossing elements and one or more slots between and adjacent to each crossing element in a second grid;
- (d) arranging said crossing elements of said first grid at intersecting angles to said crossing elements of said second grid;
- (e) arranging said grids such that each crossing element of one grid intersects ~~and extends at least partially through~~ a slot in the other grid;
- (f) positioning multiple parallel and spaced apart ~~at least one~~ connectors between said crossing elements of said first grid and said crossing elements of said second grid; and
- (g) securing said connectors to said crossing elements.

43. (Previously presented) The method of claim 42, further comprising:
providing more than two grids.

44. (Previously presented) The method of claim 43, further comprising:
positioning one or more crossing elements in each grid.

45. (Previously presented) The method of claim 44, further comprising:
arranging said crossing elements of each grid at intersecting angles to one another.

Serial No. 10/619,688

Reply to Office Action dated December 29, 2005

46. (Currently amended) The method of claim 45, further comprising:

positioning said connectors between said crossing elements of each grid.

47. (Currently amended) A static mixer assembly comprising:

a generally ring-shaped fluid flow conduit having a central axis, concentric inner and outer, radially spaced, circumferentially extending surfaces, said inner surface defining a fluid flow path which extends along said axis;

one or more static mixers located in said flow path, each static mixer having a first grid comprising at least two spaced crossing elements and one or more slots positioned between and adjacent to each crossing element and a second grid comprising at least two spaced crossing elements and one or more slots positioned between and adjacent to each crossing element,

wherein said crossing elements of said first grid are arranged at intersecting angles to said crossing elements of said second grid, and wherein said grids are arranged such that each crossing element of one grid intersects ~~and extends at least partially through~~ a slot of the other grid; and

~~at least one~~ multiple elongated connectors extending in parallel and spaced apart relationship and positioned between and secured to said crossing elements of said first grid and said crossing elements of said second grid.